1214 Pathophysiology of Acute Ischemic Syndromes

Wednesday, April 1, 1998, 3:00 p.m.–5:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 4:00 p.m.–5:00 p.m.

1214-107 Improvement of Exercise Capacity by Sarpogrelate as a Result of Increased Collateral Blood Flow in Patients With Effort Angina

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Background: Serotonin as a product of aggregating platelets is reported to reduce coronary collateral blood flow (CCBF) in a canine model. We hypothesized that a serotonin blocker, sarpogrelate would improve exercise capacity as a result of increased CCBF in the clinical setting.

Methods: This study consisted of 17 patients with effort angina and reproducible ischemic threshold (group A, 7 patients with Rentrop's collateral index 0 or 1 associated with the severely stenosed ischemia-related coronary artery (IRCA), group B, 10 patients with the index 2 or 3 associated with chronic total occlusion of the IRCA). We repeated symptom-limited treadmill exercise tests of Balke-Ware protocol and exercise tetrofosmin myocardial perfusion scintigraphy with and without pretreatment with orally administered 200 mg sarpogrelate. Each exercise test was performed at 9:00 a.m. in a different day. The order of tests with and without sarpogrelate was randomized.

Results: Although sarpogrelate did not improve exercise capacity and myocardial perfusion in group A, it increased CCBF in group B (table).

	Groups	No Drugs	Sarpogrelate	% Change
Exercise Time (sec)	A	248 ± 37	278 ± 30	19 ± 40
until 0.1 mV ST↓	B	181 ± 34†	281 ± 68*	58 ± 21
Double Product	A	24200 ± 1000	22200 ± 800	8 ± 4
at 0.1 mV ST↓	B	16800 ± 1400†	20300 ± 1400*	23 ± 7†
Severity Score	A	4.8 ± 2.0	3.7 ± 1.4	11 ± 7
at same workload	B	9.3 ± 1.4†	5.8 ± 1.1*	48 ± 7†

Mean ± SEM †p < 0.05 vs. group A *P < 0.05 vs. No Drugs

Conclusion: Sarpogrelate increases CCBF, resulting in the improvement of exercise capacity in patients with effort angina and well-developed collateral circulation to the area perfused by the IRCA.

1214-108 The Effect of Opening Coronary Occlusion on QT Dispersion

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Background: Opening an infarct related coronary artery improves survival. The mechanisms of this benefit remains controversial with one possibility being decreased arrhythmogenic substrate. QT dispersion (QTd) may represent heterogeneity of ventricular repolarization and has been associated with arrhythmic cardiac death.

Method: The dynamic behavior of QTd was evaluated in 75 patients with occluded and successfully opened coronary occlusion and in 41 patients who underwent diagnostic coronary angiography or PTCA without an occluded coronary. A 12 lead ECG was obtained at baseline, at 6 hours and at 24 hours after reperfusion. QT intervals were measured manually by blinded observers. QTd was calculated as: QTd = 100[QTmax − QTmin]/QTmin).

Results: There was no significant change in QTd after diagnostic angiogram (n = 20, QTd: 15 ± 3%, 16 ± 3%, and 15 ± 3%) and after PTCA performed on a non occluded vessel (n = 21, QTd: 13 ± 5%, 13 ± 7%, 13 ± 5%) respectively.

Groups with Occlusion	QTd Baseline	QTd 6 hours	QTd 24 hours
Primary PTCA (n = 39)	27 ± 10%	15 ± 5%**	15 ± 5%**
Delayed elective PTCA (n = 15)	28 ± 10%	17 ± 10%**	16 ± 8%**
CABG (n = 21)	23 ± 10%	11 ± 5%**	11 ± 2%**

**p < 0.01 compared to baseline.

Conclusion: A significant reduction in QTd was observed within 6 hours of revascularization of occluded coronaries. These findings may explain the enhanced electrical stability and the reduced incidence of sudden death following mechanical reperfusion.

1214-109 Enhanced External Counterpulsation Improves Exercise Capability in Patients With Chronic Stable Angina

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Background: Enhanced External Counterpulsation (EECP) augments diastolic pressure and coronary blood flow with sequential pneumatic compression of the lower limbs and buttocks, a process that after many hours of treatment has been reported to relieve angina pectoris. Since the process can have an exercise training effect on skeletal muscle, we investigated whether EECP could not only increase total treadmill time, but also the time to ST segment depression in patients with angina pectoris.

Methods: 22 patients were selected with angiographically proven coronary artery disease and who were able to perform exercise tolerance tests (ETT) according to the Bruce protocol. The mean age was 62.8 ± 8 years and 77% were men. They performed an ETT prior to starting EECP and a second ETT immediately following completion of 35 hours of EECP.

Results: Total exercise time increased from 345 ± 102 seconds to 460 ± 118 seconds (p = < 0.001). 14 patients developed ST segment depression on the pre-EECP ETT. Two patients no longer had ST segment depression post-EECP. In the patients who had ST segment depression on both ETT, the time to ST segment depression increased from 237.4 ± 105 seconds to 351.8 ± 154 seconds (p = < 0.001).

Conclusions: EECP increased total exercise time and significantly prolonged the time to ST segment depression.

1214-110 The Insertion/deletion Polymorphism of the Angiotensin-converting Enzyme Gene, and Indices of Left Ventricular Function Following Myocardial Infarction

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Background: Several reports have claimed that the deletion polymorphism of the angiotensin converting enzyme (ACE) gene causes adverse ventricular remodeling after myocardial infarction (MI), probably due to enhanced activity of the circulating renin-angiotensin system (RAS). We have investigated the relationship between the ACE genotype and left ventricular (LV) function in the subacute and late phase of MI in an unselected CCU cohort.

Methods: LV ejection fraction (LVEF) was measured by MUGA scan in 291 patients 3–7 days after MI (Normal LVEF > 40%) and blood was taken to measure angiotensin-II (A-II) levels and to allow ACE genotyping. Clinical signs of heart failure were recorded during initial hospitalisation. 181 patients had a further MUGA scan at 6 months post-MI.

ACE Genotype	Patients at baseline	Baseline LVEF% (sd)	6 Month LVEF% (sd)	Change in LVEF% (sd)
II	55	28.7 (10.4)	31.1 (11.13)	+2.2 (6.31)
ID	143	29.5 (10.7)	31.9 (9.97)	+2.24 (6.37)
DD	93	29.5 (10.9)	32.4 (9.26)	+1.19 (7.70)

p = n.s. in all cases

Results: In contrast to previous reports we have found no significant association between ACE genotype and LVEF at baseline, LVEF at 6 months, change in LVEF, or in the incidence of heart failure during hospitalisation (DD 44.3% ID 46.6%, II 40.0%; p = 0.72). However A-II levels were significantly higher in the subacute phase of MI among patients expressing the D-Allele (DD 41.2 pg/ml, ID 35.8 pg/ml, II 22.9 pg/ml; p = 0.007).

Conclusion: The ACE genotype appears to be associated with enhanced activity of the circulating RAS in the subacute phase of MI, but has no discernible effect on ventricular function within the following 6 months.

1214-111 Timing and Magnitude of Left Ventricular Remodeling After Acute Myocardial Infaction in the GISSI3 – Echo Substudy

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Background: The remodeling process after acute myocardial infarction (AMI) has still to be clarified in the thrombolytic era.

Methods: A subset of 725 pts enrolled in the GISSI3-Echo substudy underwent serial Echo studies at 24–48 hours (S1), at hospital discharge (S2), at 6 weeks (S3) and at 6 months (S4) after AMI.